

RAIL OPERATIONS COMPOSITE RISK MANAGEMENT

Army Accidents

AR 385-10 THE ARMY SAFETY PROGRAM 23 August 2007

3-3. Army accident

An Army accident is defined as an **unplanned event**, or series of events, which results in one or more of the following:

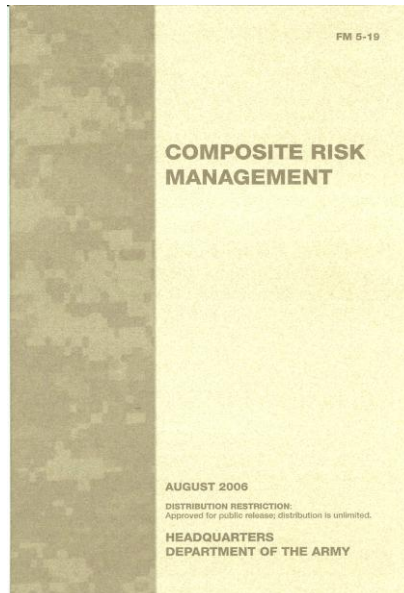
- Occupational illness to Army military or Army civilian personnel.
- Injury to on-duty Army civilian personnel.
- Injury to Army military on-duty or off-duty.
- Damage to Army property.
- Damage to public or private property, and/or injury or illness to non-Army personnel caused by Army operations (the Army had a causal or contributing role in the accident).



RISK MANAGEMENT GUIDANCE

- FM 5-19 *Composite Risk Management*.
- DA Pam 385-30 *Mishap Risk Management*.
- GCOR General Code of Operating Rules
- TC 55-88-1 Air Brake and Handling Rules.

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RAIL OPERATIONS COMPOSITE RISK MANAGEMENT

- Leaders must develop techniques that will conserve and preserve resources.
- Missions have become increasingly demanding and so have the risks inherent in those missions.
- This increase in risks requires leaders to balance reasonable risks with essential mission needs.

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RAIL OPERATIONS COMPOSITE RISK MANAGEMENT (cont)

- Risk is the possibility of loss.
- The loss can be death, injury, property damage, or mission failure.
- Composite Risk Management (CRM) identifies risks associated with a particular operation and weighs those risks against the overall mission value to be gained.

THE FOUR PRICIPLES OF RISK MANAGEMENT

- Accept no unnecessary risk.
- Accept risks when benefits outweigh losses.
- Make risk decisions at the proper level (consistent with local command policy).
- Manage risk in the concept and planning stages whenever possible.



THE RISK MANAGEMENT PROCESS

- 1. Identify hazards.
- 2. Assess the risk of those hazards.
- 3. Consider control options and make decisions.
- 4. Implement controls.
- 5. Supervise.





RISK ASSESSMENT MATRIX						
		Probability				
Severity level		Frequent A	Likely B	Occasional C	Seldom D	Unlikely E
Catastrophic	I	E	E	H	H	M
Critical	II	E	H	H	M	L
Marginal	III	H	M	M	L	L
Negligible	IV	M	L	L	L	L
E- Extreme High		H-High		M-Moderate		L-Low

IDENTIFY HAZARDS – what are they?

- Condition with potential to cause:
 - injury, illness, or death of personnel
 - damage to or loss of equipment or property
 - mission degradation
- Situation or event that can result in:
 - degradation of capabilities
 - mission failure



IDENTIFY HAZARDS

– how are they identified?

- Experience and other experts
- Regulations, manuals, standard operating procedures (SOPs), policies
- Accident data
- What-if scenarios
- Readiness assessments
- After-action reviews (AARs)



ASSESS HAZARD RISKS

- What is probability of an event or occurrence?
- Estimate the expected result or severity of an event or occurrence
- Determine specified level of risk for a given probability and severity using the standard risk assessment matrix

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ASSESS The Probability

- Assess each hazard on the probability of the event/occurrence

Risk Management Factors		
<i>Description</i>	<i>Category</i>	<i>Outcome</i>
HAZARD PROBABILITY CATEGORIES		
Frequent	A	Likely to occur frequently
Likely	B	Will occur several times in the life of an item
Occasional	C	Likely to occur sometime in the life of an item
Seldom	D	Unlikely, but possible to occur in the life of an item
Unlikely	E	So unlikely, it can be assumed occurrence may not be experienced



ASSESS The SEVERITY

- Estimate the expected result or severity of an occurrence

Risk Management Factors		
Description	Category	Outcome
HAZARD SEVERITY CATEGORIES		
Catastrophic	I	Death or system loss
Critical	II	Severe injury, severe occupational illness, or major system damage
Marginal	III	Minor injury, minor occupational illness, or minor system damage
Negligible	IV	Less than minor injury, occupational illness or damage



RISKS LEVELS

- Determine specified level of risk using the standard assessment matrix
 - **Extremely High Risk** – loss of ability to accomplish the mission if hazard occurs during the mission
 - **High Risk** – significant degradation of mission capabilities in terms of the required mission standard, inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission
 - **Moderate Risk** – expected degraded mission capabilities in terms of the required mission standard and will result in reduced mission capability if hazard occurs during the mission
 - **Low Risk** – expected losses have little or no impact on accomplishing the mission



DEVELOP CONTROLS

& MAKE DECISIONS

- Eliminate the hazard or reduce the risk with:
 - Educational (awareness) Controls - training
 - Physical Controls – barriers/guards/signs
 - Avoidance / Elimination Controls – positive action
- Controls must be:
 - Suitable – remove the hazard or mitigate the risk
 - Feasible – unit must have capability to implement
 - Acceptable – benefit gained must justify the cost



DEVELOP CONTROLS

& MAKE DECISIONS (cont)

- Find control measures using:
 - Who – entire crew
 - What – fire fighting and damage control awareness
 - Where – vessel safety equipment
 - When – prior getting underway and then each week
 - How – realistic training scenarios with safety gear



IMPLEMENT CONTROLS

- Ensure that controls are integrated into SOPs, written and verbal orders, and briefings:
 - Safety briefings
 - Orientation of replacement personnel
 - Training and drills
 - Effective communications

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Your plan is only as effective as your communications

SUPERVISE AND EVALUATE

- Ensure that risk controls are implemented and enforced to standard
 - Provide good supervision
 - Situational awareness
 - Establish discipline
 - Identify new hazards
 - Assess effectiveness



THE RISK MANAGEMENT PROCESS

RISK ASSESSMENT MATRIX					
	Probability				
Severity level	Frequent A	Likely B	Occasional C	Seldom D	Unlikely E
Catastrophic I	E	E	H	H	M
Critical II	E	H	H	M	L
Marginal III	H	M	M	L	L
Negligible IV	M	L	L	L	L
E- Extreme High	H-High		M-Moderate		L-Low

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RISK ASSESSMENT SHEET

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<i>Location</i>	<i>Task</i>	<i>Hazard</i>	<i>Potential Injury or Loss</i>	<i>Preliminary Risk Level</i>	<i>Control Measures</i>	<i>Hazard Fully Controlled</i>	<i>Residual Risk Level</i>
Where will the training/ops take place?	What training/ops will be conducted?	What is the source of injury or loss?	Most likely, not most severe	What is the risk level (use matrix) before controls?	Be specific: what, where, when, how, and who. Make changes that reduce the risk without jeopardizing the mission.	yes or no	What is the risk level (use matrix) after controls?
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Allision	Catastrophic - Damage to vessel/equipment, damage to railroad/highway bridges, damage to dock structures, death	High (I, C)	While towing BD-6801, make bridge approaches only with assistance of ST-915. Conduct pre-maneuver briefings with key participants. Ensure reliable communications are tested and in place. Proceed at slow speed with adequate lookouts in place to monitor progress and report close quarters conditions. Abort poor approaches immediately.	Yes	Moderate(I, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Collision	Catastrophic - Damage to vessel/equipment, death	High (I, D)	Comply with COMDTINST M16672.2D "Navigation Rules" and keep an alert lookout. Post adequate number of watch standers. Conduct safety briefings prior getting underway. Maintain radio communications.	Yes	Low(II, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Fire/Abandon Ship	Catastrophic - Smoke inhalation, burn injuries, drowning, death	High (I, D)	Establish "good housekeeping" practices to eliminate potential ignition sources. Hold drills to familiarize crew with on-board fire fighting equipment. Ensure that all-hands are aware of their responsibilities detailed in the Emergency Station Bill. Conduct detailed debriefings to enhance crew competence.	Yes	Low(II, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Man Overboard	Catastrophic - Hypothermia/drowning	High (I, D)	Enforce buddy system policy and ensure work vests/anti-exposure coveralls are worn for weather deck evolutions. Stress team work. Hold training sessions for rescue boat crew.	Yes	Low(II, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Grounding	Critical - Damage to vessel/equipment	High (II, C)	Ensure proper piloting and chart navigation techniques are used at all times. Utilize all means of position fixing to include GPS and terrestrial fixes. Calculate tide and current conditions. Post alert lookouts and provide them with knowledge of water depth characteristics for the area during their watch rotation.	Yes	Low(II, E)

RISK ASSESSMENT SHEET (cont)

<i>Location</i>	<i>Task</i>	<i>Hazard</i>	<i>Potential Injury or Loss</i>	<i>Preliminary Risk Level</i>	<i>Control Measures</i>	<i>Hazard Fully Controlled</i>	<i>Residual Risk Level</i>
Where will the training/ops take place?	What training/ops will be conducted?	What is the source of injury or loss?	Most likely, not most severe	What is the risk level (use matrix) before controls?	Be specific: what, where, when, how, and who. Make changes that reduce the risk without jeopardizing the mission.	yes or no	What is the risk level (use matrix) after controls?
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Physical/Mental Stress	Marginal - Injury due to carelessness	Moderate(III, B)	Ensure crew is properly rested during time off. Maintain good sanitation practices.	Yes	Low(III, D)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Inexperienced Crew	Critical - Damage to vessel/personnel injury	High (II, C)	Provide instruction, both collective and individual prior to all activities and evolutions. Conduct exercises at easy pace with safety as a priority. Use the buddy system.	Yes	Low(II, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Poor Weather Conditions	Marginal - Personal injury, damage to equipment, vessel, and/or the environment	Moderate (III, C)	Monitor local and regional weather broadcasts from NWS and USCG. Do not attempt BD towing operations if wind conditions approach Small Craft Advisory levels (20 knots).	Yes	Low(III, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Towing	Critical - Damage to vessel/equipment/personnel	High (II, B)	Ensure equipment is adequate and crew properly trained to rig the tow, operate the tow winches and line-throwing device. Refer to FM 55-501 "US ARMY TOWING MANUAL" as reference. Inspect gear prior to usage and use the right gear for the right tow. Provide adequate supervision. Proceed at easy and safe work pace for existing conditions.	Yes	Low(II, E)
Port Henderson, Curtis Creek, MD to Upper Chesapeake Bay	Make-up BD tow and maneuver BD through bridge openings with ST-915 assisting. Perform tug handling with / without tow.	Poor Medical Response Due Location	Marginal - Increased severity of injury to personnel	Moderate(III, D)	Provide adequate on-board medical supplies. Area of operations will be within scope of timely USCG medical response capabilities. Review emergency medical response procedures including helo medivac that support the potential severity of injuries that may occur.	Yes	Low(III, D)

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RISK ASSESSMENT SHEET (cont)

<i>Location</i>	<i>Task</i>	<i>Hazard</i>	<i>Potential Injury or Loss</i>	<i>Preliminary Risk Level</i>	<i>Control Measures</i>	<i>Hazard Fully Controlled</i>	<i>Residual Risk Level</i>
Where will the training/ops take place?	What training/ops will be conducted?	What is the source of injury or loss?	Most likely, not most severe	What is the risk level (use matrix) before controls?	Be specific: what, where, when, how, and who. Make changes that reduce the risk without jeopardizing the mission.	yes or no	What is the risk level (use matrix) after controls?
THIRD PORT	RIG TOW FOR BD CRANE	INEXPERIENCED CREW	CRITICAL	HIGH (II CRITICAL) (B LIKELY)	CONDUCT ONE FULL DAY OF TRAINING ON TOWING PROCEDURES AND LAY OUT ALL TOWING JEWELRY NEEDED FOR THE OPERATION	YES	LOW (II CRITICAL) (E UNLIKELY)

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LEVELS OF RISK APPROVAL

- Low – Company Commander
- Moderate – Group or Brigade Commander
- High – First GO in chain of command
- Extremely High – CG TRADOC

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Table 4-1 Accident notification, reporting requirements and suspenses					
PEACETIME				COMBAT ²	
ACCIDENT CLASS	TELEPHONIC NOTIFICATION WORKSHEET	Abbreviated Report AGAR	Full Report DA FORM 285	TELEPHONIC NOTIFICATION WORKSHEET	AGAR ONLY By any Means Possible (ARAS, email, fax, hand carry, mail)
ON-DUTY A & B	Immediately ¹	Not Required	IAI/CAI-90 days	Immediately ¹	As time Permits (Not to Exceed 60 days)
C	Not Required	W/in 90 days	Not Required	Not Required	As Time Permits (Not to Exceed 60 days)
D	Not Required	W/in 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
OFF-DUTY A & B	Immediately ¹	W/in 30 days	Not Required	Immediately ¹	As Time Permits (Not to Exceed 30 days)
C & D	Not Required	W/in 30 days	Not Required	Not required	As Time Permit (Not to Exceed 30 days)
NOTE: 1. USACRC must be notified IMMEDIATELY by phone at DSN 558-2660/2539/3410 or COM (334) 255-2660/2539/3410 or notify safety rep forward (during combat). 2. When the senior tactical commander determined that the situation, conditions or time does not permit normal peacetime investigation and reporting.					

Table 4-1a, Accident notification, reporting requirements and suspenses

For use of this form, see FM 5-19; the proponent agency is TRADOC.

FM 5-19

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SUBTASK:
Erect Antenna

COMPOSITE RISK MANAGEMENT WORKSHEET

For use of this form, see FM 5-19; the proponent agency is TRADOC.

1. MSN/TASK LOTS Operations CP		2a. DTG BEGIN 1 Apr 2009		2b. DTG END 5 Apr 2009		3. DATE PREPARED (YYYYMMDD) 20090418	
4. PREPARED BY							
a. LAST NAME Victory B. A		b. RANK 2LT		c. POSITION TBOLC Operations Officer			
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFECTIVE?
Erect Antenna	Eye, head injury, Electrical shock - overhead wires or lightning		Eye protection, Hard hat or kevlar, gloves. Select erection position two times the height away from over head lines. Ground system. Watch potential winds and gusts.	L	Supervise site selection, provide PPE, Sdq Leader enforces controls. Brief Soldiers on hazards.	Sdq Ldr & NCOIC	
Traffic control admin area	Run over, crushing		Ground guide will be established at entrance of main / bivouac areas.	L	Check point will be established to control entrance and exit of vehicles all personnel will be brief.	NCOIC CSM 1SG	

HAZARD:
Eye Injury
From falling antenna tip

Additional space for entries in Items 5 through 11 is provided on Page 2.

13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)



LOW



MODERATE



HIGH



EXTREMELY HIGH

14. RISK DECISION AUTHORITY

a. LAST NAME Rutherford	b. RANK MAJ	c. DUTY POSITION IMOD Division Cheif	d. SIGNATURE FM 5-19
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For use of this form, see FM 5-19; the proponent agency is TRADOC.

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FM 5-19

COMPOSITE RISK MANAGEMENT WORKSHEET

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Traffic control admin area	Run over, crushing	M	Ground guide will be established at entrance of admin / bivouac areas.	L	Check point will be established to control entrance and exit of vehicles all personnel will be brief.	NCOIC CSM 1SG		
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13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)								
<input checked="" type="checkbox"/> LOW <input type="checkbox"/> MODERATE <input type="checkbox"/> HIGH <input type="checkbox"/> EXTREMELY HIGH								
14. RISK DECISION AUTHORITY								
a. LAST NAME Rutherford		b. RANK MAJ		c. DUTY POSITION IMOD Division Cheif			d. SIGNATURE	

CONTROLS:

Think of the **3Es**

Engineer the Hazard out

Educate the Soldiers of the Hazard

Enforce the Standards (or police)

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RESIDUAL RISK LEVEL:
L = LOW

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HOW TO SUPERVISE: COMO NCO

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WAS CONTROL EFFECTIVE?:
AAR (after mission: Yes or No)

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Overall Mission Risk Level,
Highest Risk

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4. PREPARED BY

a. LAST NAME Victory B. A	b. RANK 2LT	c. POSITION TBOLC Operations Officer
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Traffic control admin area	Run over, crushing	M	Ground guide will be established at entrance of admin / bivouac areas.	L	Check point will be established to control entrance and exit of vehicles all personnel will be brief.	NCOIC CSM 1SG	

**SUBTASK:
Erect Antenna**

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13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)
<input checked="" type="checkbox"/> LOW <input type="checkbox"/> MODERATE <input type="checkbox"/> HIGH <input type="checkbox"/> EXTREMELY HIGH

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a. LAST NAME Rutherford	b. RANK MAJ	c. DUTY POSITION IMOD Division Cheif	d. SIGNATURE

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Do not Accept Unnecessary Risk,
Plan it out,
Brief it to everyone involved and supervise it.

You may have to live with High Risk but you must do everything you can to control it or report to higher that you need help controlling it (such as manpower)

COMPOSITE RISK MANAGEMENT WORKSHEET

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Traffic control admin area	Run over, crushing	M	Ground guide will be established at entrance of admin / bivouac areas.	L	Check point will be established to control entrance and exit of vehicles all personnel will be brief.	NCOIC CSM 1SG		

FM 5-19

Lastly a Risk Assessment is no better then the paper its written on
If your Soldiers haven't seen it or been explained the risks you have wasted your time and put them at Risk.

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13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)

☒ LOW ☐ MODERATE ☐ HIGH ☐ EXTREMELY HIGH

14. RISK DECISION AUTHORITY

a. LAST NAME Rutherford	b. RANK MAJ	c. DUTY POSITION IMOD Division Cheif	d. SIGNATURE
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